

# AN ANOPHELES OF THE *MYZORHYNCHUS* GROUP (*Anopheles* *amazonicus* sp.n.) FROM SOUTH AMERICA

BY

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(Received for publication 4 January, 1923)

## PLATE IV

Among some material at the Liverpool School of Tropical Medicine, which owing to the kindness of Professor R. Newstead, F.R.S., I was able to examine when home on leave, I was fortunate enough to find a specimen of an anopheline brought by Dr. A. A. Clark from the River Amazon, which not only seemed to be new, but which appeared to be the first instance of an undoubted *Myzorhynchus*, using this term in its restricted sense, recorded from South America, or, indeed, from the New World. On looking up material previously brought by Dr. Clark from this region, Professor Newstead was able to find two other specimens of the same species not quite in such good preservation. With Professor Newstead's kind permission, I give below a description of this species under the name *A. amazonicus*. All three specimens were females, the first mentioned being selected as the type and so labelled in the Liverpool School collection.

*A. amazonicus* closely resembles the Old World species of the group *Myzorhynchus*, and it possesses the ventral abdominal scale tuft on the penultimate abdominal segment which Theobald used to define the genus *Myzorhynchus* when he created it, though it is now known that this character is not present in all the species of the group. In one character, however, *A. amazonicus* approaches the *Arribalzagia* group, which normally, so to speak, represents *Myzorhynchus* in South and Central America. The character referred to is a kink or bend in the costa at the subcostal junction associated with one or more small accessory dark spots in this

position. From the description it will be seen that *A. amazonicus* possesses this feature, though it shows nothing of the other more salient *Arribalzagia* characters such as inflated wing scales, eye-spots on the thorax, abdominal scaling, etc.

A very marked specific feature of *A. amazonicus* is the great length of the anterior forked cell, which measures one-third of the wing length and extends so far inwards that the bifurcation is at the level of the junction of the subcosta with the costa.

*Anopheles (Anopheles) amazonicus*, sp. n.

DIAGNOSTIC POINTS.

An easily identified species characterised by:—

- (1) The wings with pale interruptions on the costa.
- (2) The palps shaggy and without definite bands.
- (3) The hind tarsi dark.
- (4) The femora and tibiae unicolorous.
- (5) The bifurcation of the second longitudinal vein at the same level as the junction of the subcosta with the costa.
- (6) A ventral scale tuft on the penultimate abdominal segment.

DETAILED DESCRIPTION.

♀. A largish dark anopheline of *Myzorhynchus* appearance; general coloration rather rusty black. Length of wing, 4·4 mm.

*Antennæ* with the basal segment dark, free from scales; the second segment with a small tuft of pale and darkish scales on inner aspect; remaining segments free from scales. *Palpi* with the segments, commencing with the rudimentary basal one, measuring respectively 6, 21, 35·5, 21·5 and 16 per cent. of the whole organ. Palpal index (measured from unmounted specimen) 0·7. General appearance of palpi as in *A. umbrosus*, Theo.; densely covered with black erect or semi-erect scales almost to the apex, but with these longer on the basal rudimentary and succeeding segment; apex dark and organ without obvious pale bands, though one or two light scales are present at the apices of segments three and four difficult to see except in certain lights. *Labium* black scaled, the

scales somewhat erect over basal half; labellae darkish. *Clypeus* dark, bare. *Head* with the frons and vertex with small very narrow white scales, less prolonged than usual. The pale area smaller in extent than usual; including the area of narrow scales in front and about the same extent of the ordinary upright scales behind this. *Occiput* with dark erect truncate scales of ordinary anopheline type, extending below level of neck. Some broad white scales beneath, between the eyes, gular chaetae black.

*Prothoracic lobes* with dense tufts of black erect scales and numerous chaetae. *Prosternal hairs* about four. *Mesonotum* of uniform coloration, dull brown, the bare spaces, etc., not conspicuous; chaetae inconspicuous and presence of median series doubtful. The surface clothed with light coloured hairs, scantily but fairly uniformly distributed over the dorsum, including the fossae. Anterior promontory with a smallish area medially of long curved, pale scales, not forming a conspicuous feature; laterally, and extending about half way to the lateral angular process of the mesonotum, are rather conspicuous erect pale spatulate scales. *Scutellum* with about twenty-four large hairs and a second line of two additional hairs on each lateral lobe; scattered smaller impressions (scales or hairs) medially. *Spiracular hairs* about two. *Pre-alar hairs* about eight.

*Wings* with the length 4·44 mm. and the greatest breadth 1·05 mm. Base to subcostal junction 0·67, anterior forked cell 0·33, posterior forked cell 0·19 of the length of the whole wing. Forked cell index 1·8. The anterior forked cell unusually long, and the bifurcation of the second longitudinal vein so far towards the base of the wing that it is on a level with the junction of the subcosta with the costa.

The wing markings, as a whole, are rather diffuse, the pale areas not being very distinct, whilst there is an admixture in places of pale and dark scales. Costa mainly dark, but with the following pale areas: a minute one near base, a well marked one at about the junction of the inner with the middle third of the wing length; a comparatively large one just internal to the subcostal junction, a somewhat smaller one actually at the subcostal junction and one at the apex of the wing not quite reaching to the point of junction of the first longitudinal with the wing margin. The most

characteristic feature of the costal markings is the presence of the small accessory dark spot, involving the costa only, which lies between the two pale areas in the region of the subcostal junction. In this position there is also seen a slight but distinct bend or kink in the costa, as in species of *Arribalzagia*. The *first vein* is marked as the costa, but with additional pale areas at the base and at the accessory sector. The *second vein* has the stem mainly pale scaled, with dark scales at the cross-vein and just distal to its origin; the upper branch has a small pale spot just external to the middle, and the lower branch an indistinct one somewhat internal to this; the branches are also pale where they join the wing margin, though the fringe itself here is dark. The *third vein* is mainly dark, but has light scaled areas, separated by a conspicuous small dark spot, on its basal portion. The *fourth vein* stem is dark, with white scaled areas near the base and proximal to the cross-vein. The branches are mainly dark with pale scales forming one (or two) small spots on the upper branch. The *fifth vein* has the stem with mixed dark and pale scales, the anterior branch with pale patches near the base and beyond the cross-vein, the posterior branch with pale (mixed with dark) scales on its proximal and dark scales on its distal half. The *sixth vein* has alternate dark and light portions (four pale and four dark areas). The *fringe* is dark from the apical costal spot to the space between the veins 3 and 4·1 where there is a light spot. There is another somewhat indefinite pale spot between 4·2 and 5·1. The remainder of the wing fringe is too rubbed in all the specimens for description.

Except for the spots on the costa and on vein 2·1, the scales of the under surface are all dark. The wing membrane is stained, but is lighter at some of the pale scaled areas.

The scaling of the wing shows the normal arrangement, but the truncated squames of the median series are very inconspicuous owing to the development of the laterals, whilst these latter and the plume scales of the reverse side of the veins approach each other in character so closely that they are scarcely to be distinguished. The general effect is a heavy scaling with rather uniform large obovate scales. The squames show from seven to nine striations, the laterals ten to eleven, and the plumes usually nine striations, but some slightly broader plumes are present on the fourth vein (upper

surface), where they may show as many as twelve striations. This is the position where the large inflated scales of *Arribalzagia* occur.

The *coxae*, in the case of the anterior pair, have black scales basally and anteriorly, also posteriorly and apically. The middle and posterior pair appear devoid of scales. The anterior *trochanters* with black and white scales, the middle and posterior apparently devoid of scales. *Femora* of the anterior pair moderately dilated in inner half. The femora and tibiae of all the legs without definite markings, except that there is a lightish triangular spot on the mid-tibia apically. Tarsal segments of all the legs dark, unicolorous, but with the apices of segments one, two and three narrowly pale, four and five being dark.

The abdomen with hairs only, except ventrally. Cerci with hairs only. Ventral surface with hairs, except medially, where on segments four to seven, somewhat nearer the posterior than the anterior border of the segment, are small patches of white scales, the number of scales increasing up to the patch on the seventh segment. On the seventh segment, posterior to the white scales, is a prominent projecting tuft of black scales.

HABITAT, etc. The specimens were collected by Dr. A. A. Clark on his journeys up and down the Amazon. The type was labelled 'A. A. Clark, River Amazon, June, 1915.'

*A. amazonicus* is distinguished from *A. vestitipennis*, Dyar and Knab, to which it has some resemblance, by the absence of speckling of the femora and tibiae, by the tarsal markings and by differences in the wing markings. It is distinguished from *A. crucians*, Wied., by the costal and palpal markings, from the Myzorhynchellas by the uniform colour of the hind tarsi, and from *A. peryassui*, Dyar and Knab, by the absence of eye-spots on the thorax, etc.

The only species about which some doubt must remain is *A. matogrossensis*, Lutz and Neiva. The description of *A. matogrossensis* given by Lutz and Neiva (1911) corresponds in a number of respects with the species now described. But the wings are described as 'rather dark, especially on the costa, where there are two spots lighter in colour, greyish yellow; there is a band, whitish-yellow, transversal and sub-apical, formed by a group of cream-coloured scales; there are others distributed in a somewhat irregular manner upon the longitudinal veins, scarcely distinguishable by the

naked eye.\* As there are three quite distinct spots on the costa of *A. amazonicus*, the correspondence here would not seem to hold good. The description also says nothing about a ventral tuft on the penultimate segment, though the ventral surface of the abdomen is described as 'having traces of elongate scales, narrow and rather long.'† In *A. amazonicus* the scales, other than those forming the tuft, are few in number, and would scarcely be described in the words used in the description of *A. mattogrossensis*. Unfortunately the description given of *A. mattogrossensis* is rather meagre, and I am unaware of any other reference to this species giving any further particulars, whilst the type is presumably in South America.

#### REFERENCE

LUTZ and NEIVA (1911). Notas Dipterolojicas. *Mem. Inst. Osw. Cruz.*, Vol. III, p. 297.

\* The original passage reads, 'Azas bastante escuras, principalmente na costa, onde ha duas manchas de côr mais clara, amarelo-pardacenta; ha um risco branco-amarelado transversal e subapical, formado por um agrupamento de escamas de côr creme; ha outras, distribuidas de modo um tanto irregular, sobre as nervuras lonjitudinais, que apenas se distinguem a olho nu.'

† 'na ventral ha vestijios de escamas alongadas, estreitas e pouco compridas.'

## EXPLANATION OF PLATE IV

Fig. 1. Camera-lucida drawing of wing of *A. amazonicus*. The scales are not shown, but the positions of the dark and pale scaled areas on the veins are indicated by shading.

Fig. 2. Truncated squames of the median series (obverse scaling).

- a.* Costa internal to subcostal junction.
- b.* First longitudinal, basal portion.
- c.* do. at level of subcostal junction.
- d.* Stem of vein 5.

Fig. 3. Lateral squames (obverse scaling).

- a, b, c.* As in fig. 2.

Fig. 4. Scales *in situ* on anterior branch of vein 5.

- m.* Median.
- l.* Lateral.
- pl.* Plume scales of reverse side of vein seen through the wing membrane. Vein 5 is a normal vein, *i.e.*, the squame scales are uppermost.

Fig. 5. Plume scales of reverse aspect of veins.

- a.* Costa external to subcostal junction.
- d.* Stem of vein 5.
- e.* Stem of vein 4, upper surface. Vein 4 is a reverse vein, *i.e.*, the squames are beneath and the plume scales uppermost.

Fig. 6. Ventral view of terminal portion of abdomen, showing scale tuft.

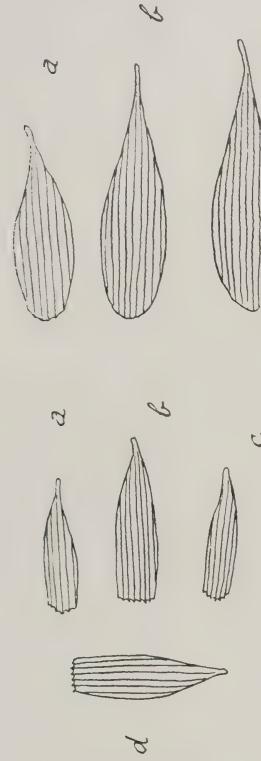


FIG. 2

FIG. 3

FIG. 4

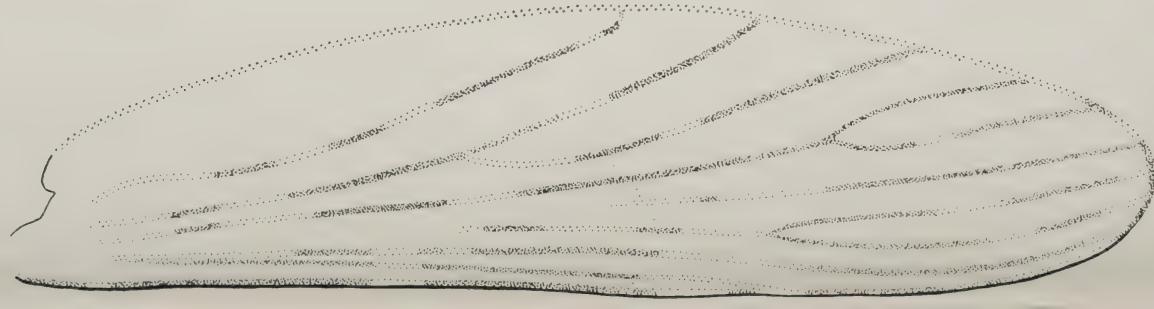


FIG. 1

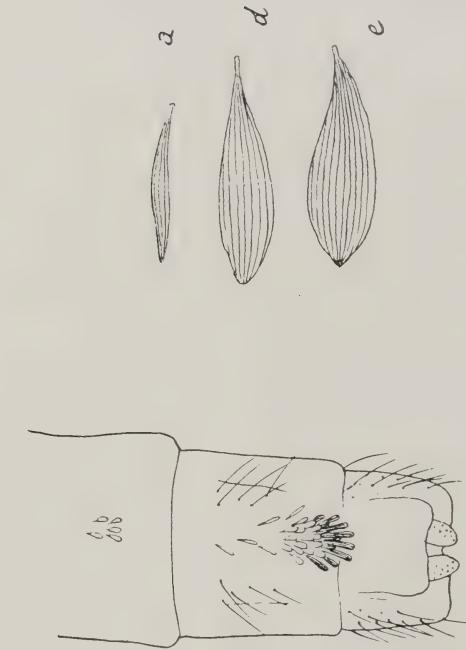


FIG. 5

FIG. 6